Open Science Grid
An Update
and Its Principles

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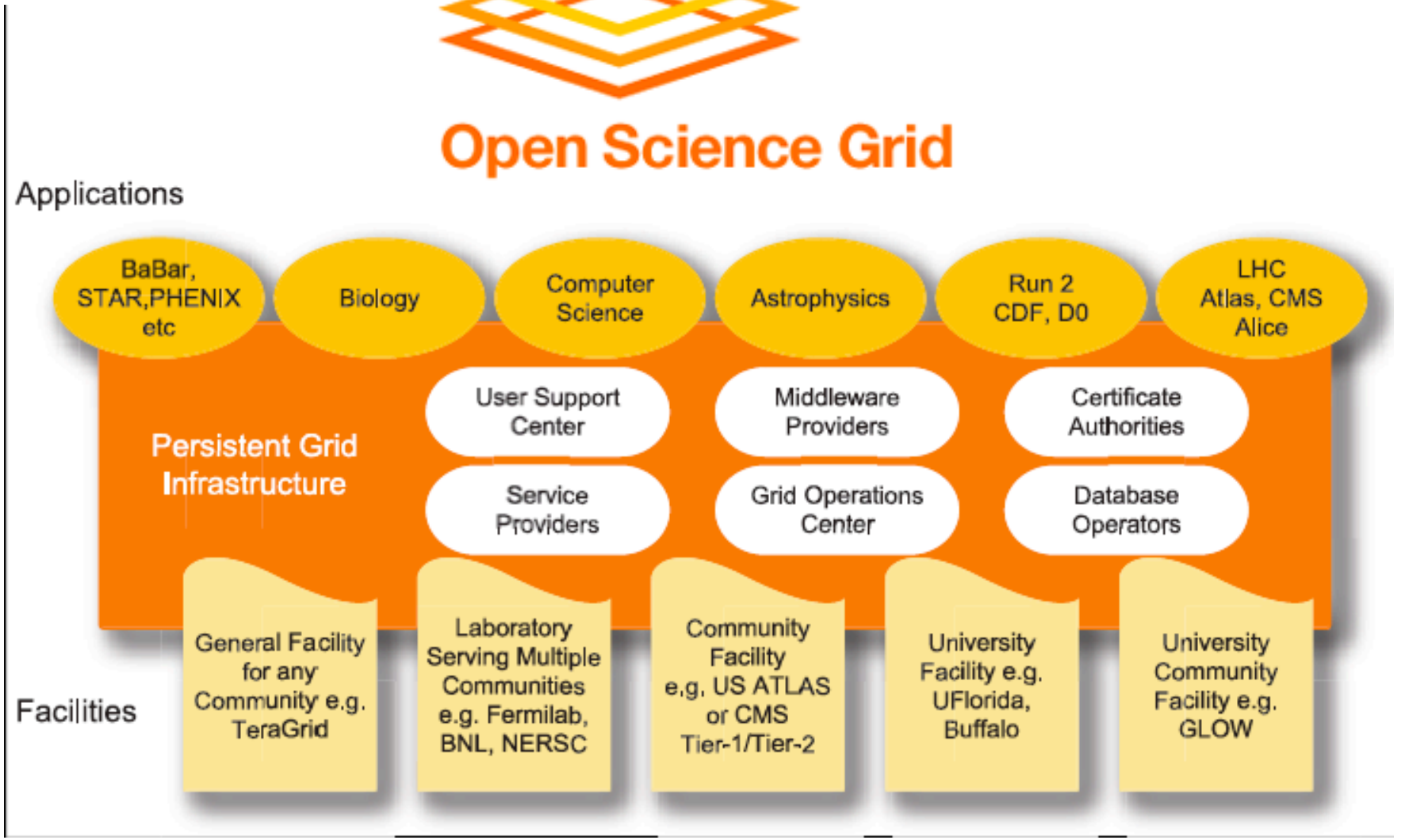
Open Science Grid

Open Science Grid

- Build on and evolve Grid3 towards a sustained production common grid infrastructure through “grass-roots” collaboration.
- Goals
  - Continue collaboration of US-ATLAS & US-CMS. Provide base for US Grid contributions to LHC.
  - Expand Grid3 participants and users to all PPDG and to all HENP experiments.
  - Invite and encourage other sciences to participate - contribute and benefit.
- Encouragement to have cross-funding agency approach and contributions.

Open Science Grid



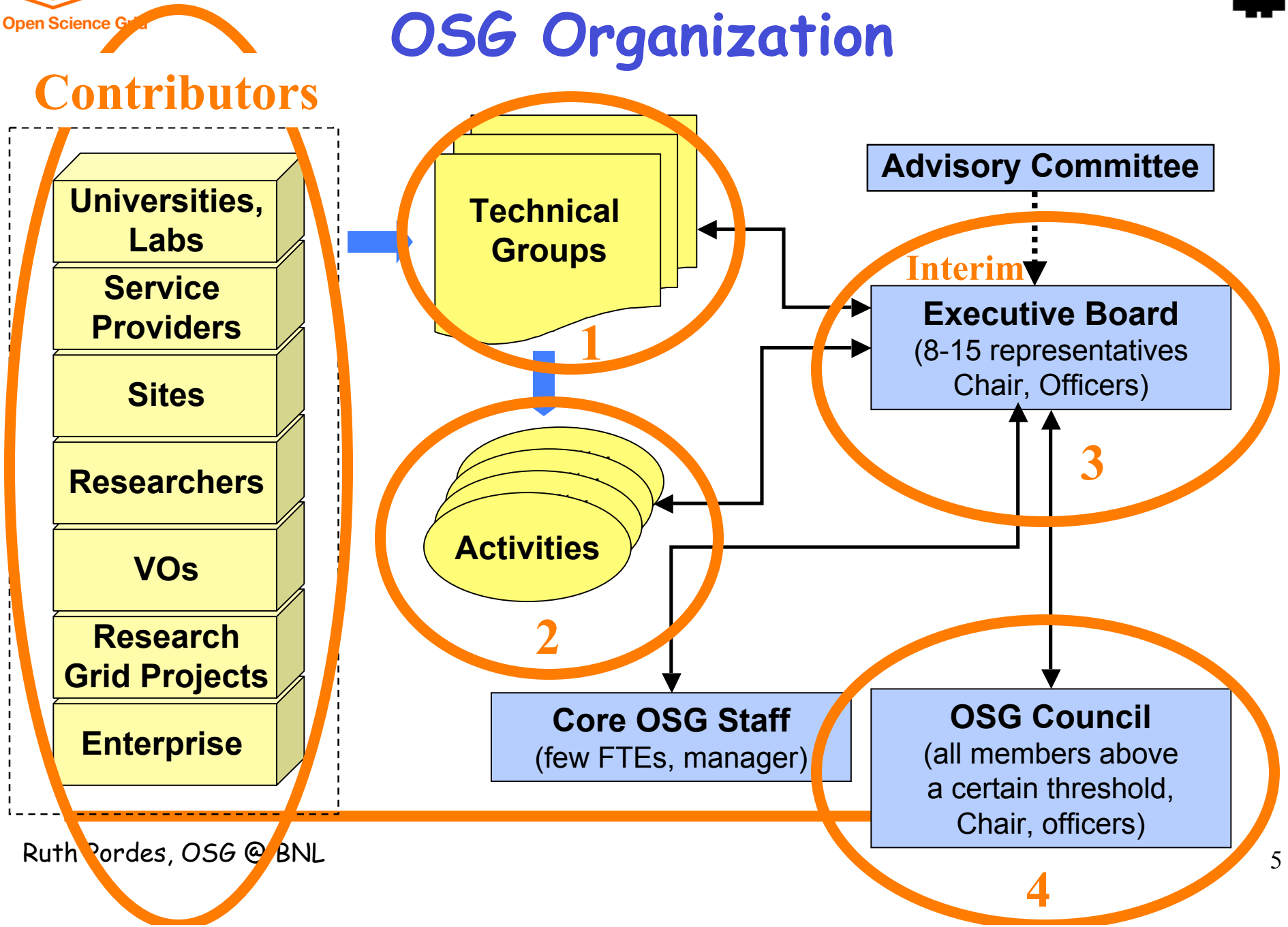
http://www.opensciencegrid.org

Open Science Grid (OSG)

- What is it?
  - It is NOT a project (unlike EGEE, US ATLAS S&C, etc)
  - It is a collaboration – a Consortium of many institutions. Universities and Labs, projects, experiments, middleware providers, campus Grids

    Who want to leverage their efforts by joining together to build a sustainable infrastructure for physics and other sciences
- Does this work?

OSG Organization



~1 year after Joint Steering Meeting

- OSG Integration Testbed has 20 sites and ITB infrastructure has had 3 releases.

http://osg.ivdgl.or/twiki/bin/view/Integration/WebHome

- US-ATLAS and US-CMS have committed to provide resources to ATLAS and CMS experimenters through the Open Science Grid as part of the global "LHC Computing Grid".
- STAR, CDF, D0, STAR, BaBar reading their applications & infrastructure for the common grid:
  - CDF run simulation on an OSG ITB site
  - D0 running re-reconstruction on US CMS Tier-1 Grid3.
  - STAR running on PDSF Grid3 site.
  - BaBar has SLAC site on the OSG ITB

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And..

- TeraGrid Grid Integration Group (GIG) plans to interoperate with OSG.
  - Milestones included in their proposal.
- Many LCG & EGEE contacts with OSG activities.
  - Security, Operations, Storage, Interoperability, Accounting
- Seeing partners and interest in joining this Grid outside of Physics
  - Dartmouth FMRI, GLOW, SURA…

OSG Technical Groups today

Governance	Charter, organization, by-laws, agreements, formal processes
Policy	VO & site policy, authorization, priorities, privilege & access rights
Security	Common security principles, security infrastructure
Monitoring and Information Services	Resource monitoring, information services, auditing, troubleshooting
Storage	Storage services at remote sites, interfaces, interoperability
Support Centers	Infrastructure and services for user support, helpdesk, trouble ticket
Education / Outreach	Training, interface with various E/O projects
Networks	Including interfacing with various networking projects

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OSG Activities

Blueprint	Defining principles & best practices for OSG
Deployment	Deployment of resources & services
Incidence response	Plans and procedures for responding to security incidents ✓done
Integration	Testing, validating & integrating new services and technologies
Interoperability	Interoperation with other grids, especially LCG and TeraGrid
Data Resource Management (DRM)	Deployment of specific Storage Resource Management technology
Documents	Make front and user pages for deployment
Operations	Operate the deployed infrastructure

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How has Grid3 Evolved ?

- All middleware packages updated - VDT 1.3.4
- “a few” Storage Elements accessible via SRM Grid interfaces
- Site based dynamic and (almost) role based account management.
- Data Movement & Management getting increasing attention - long way to go.
- Preparation for heterogeneous more loosely coupled infrastructure.
  - Monitoring, Discovery, Information services.

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New Partners Contributing

- Dartmouth psychology & brain sciences research
  - Co-chair of Policy Group
- GRASE VO with a basket of applications from the HPC consortium
  - Co-chair of Monitoring Group
- New Storage Management solutions?
  - NFS4 - University of Michigan
  - IBP - Advanced storage management - Vanderbilt
  - Co-chair of Networks & Storage Group
- Interest from DOSAR, SURA, etc.
- Certificate Handling, Accounting, Planning…

OSG Infrastructure - a Grid of Grids

- Infrastructure defined by Interfaces, Services and Policies.
- Campus, Experiment, (Commercial?), “Other” Grids present Resources and Services to the Common Infrastructure.
- Users and Organization environments interface to a consistent set of resources - across Grid boundaries.

Principles - how they drive it..

- Agreement by architects on some fundamental goals and scope that we reference often: Blueprint

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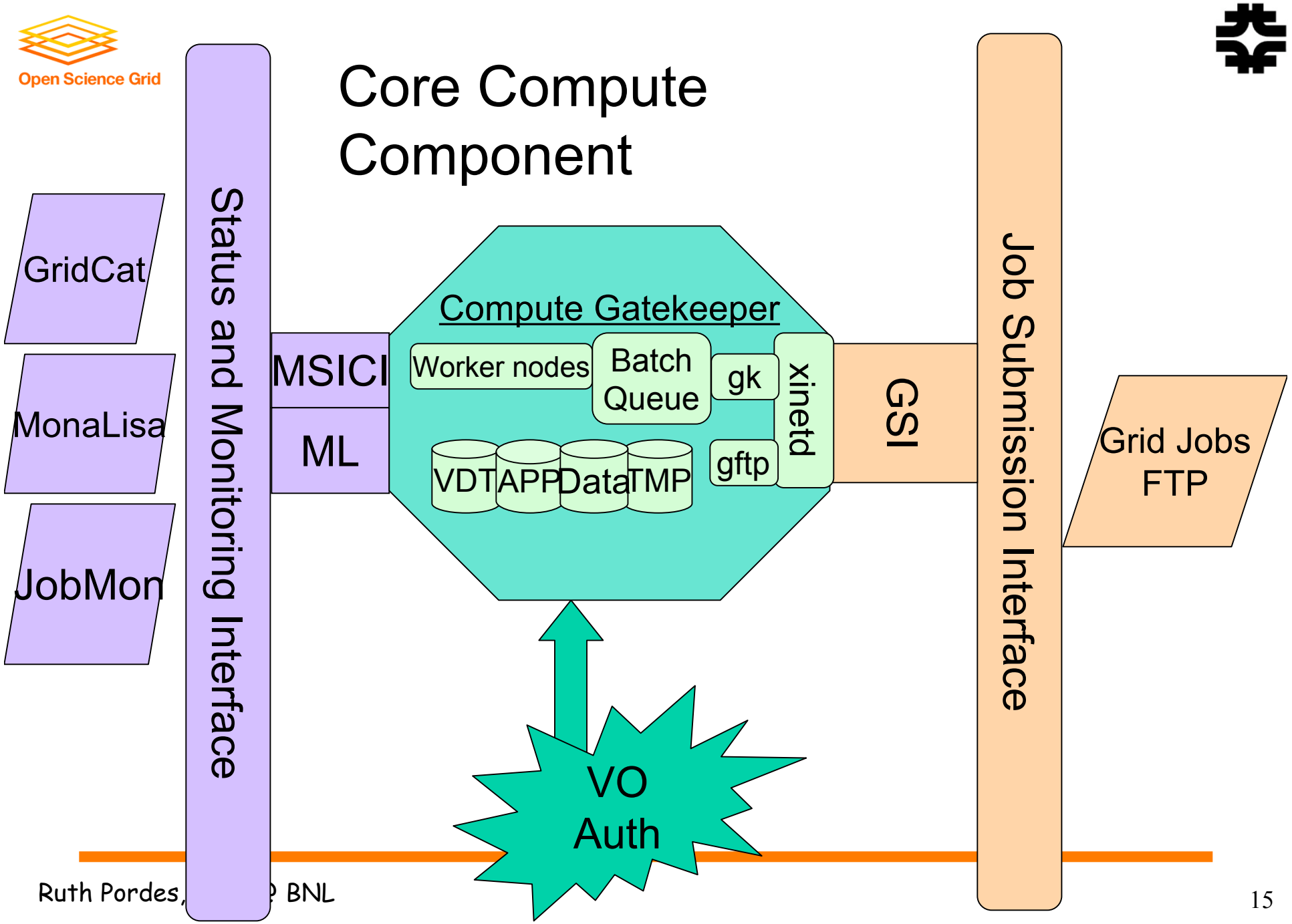
Principles of Operation

- Common Interfaces not necessarily Implementations.
- Heterogenous Infrastructure - not a uniform set of Service and Infrastructure release.
- Autonomy of Sites and Resources
  - Overriding Policy Enforcement Points.
  - Move to “pull” model for Work to be done.
- Experiment (VO) based environment, services, operation and management
  - Common services with VO-specific instantiations.
- Mix of Assured and Opportunistic use.
  - Latter has minimal expectations on site availability, performance and support.



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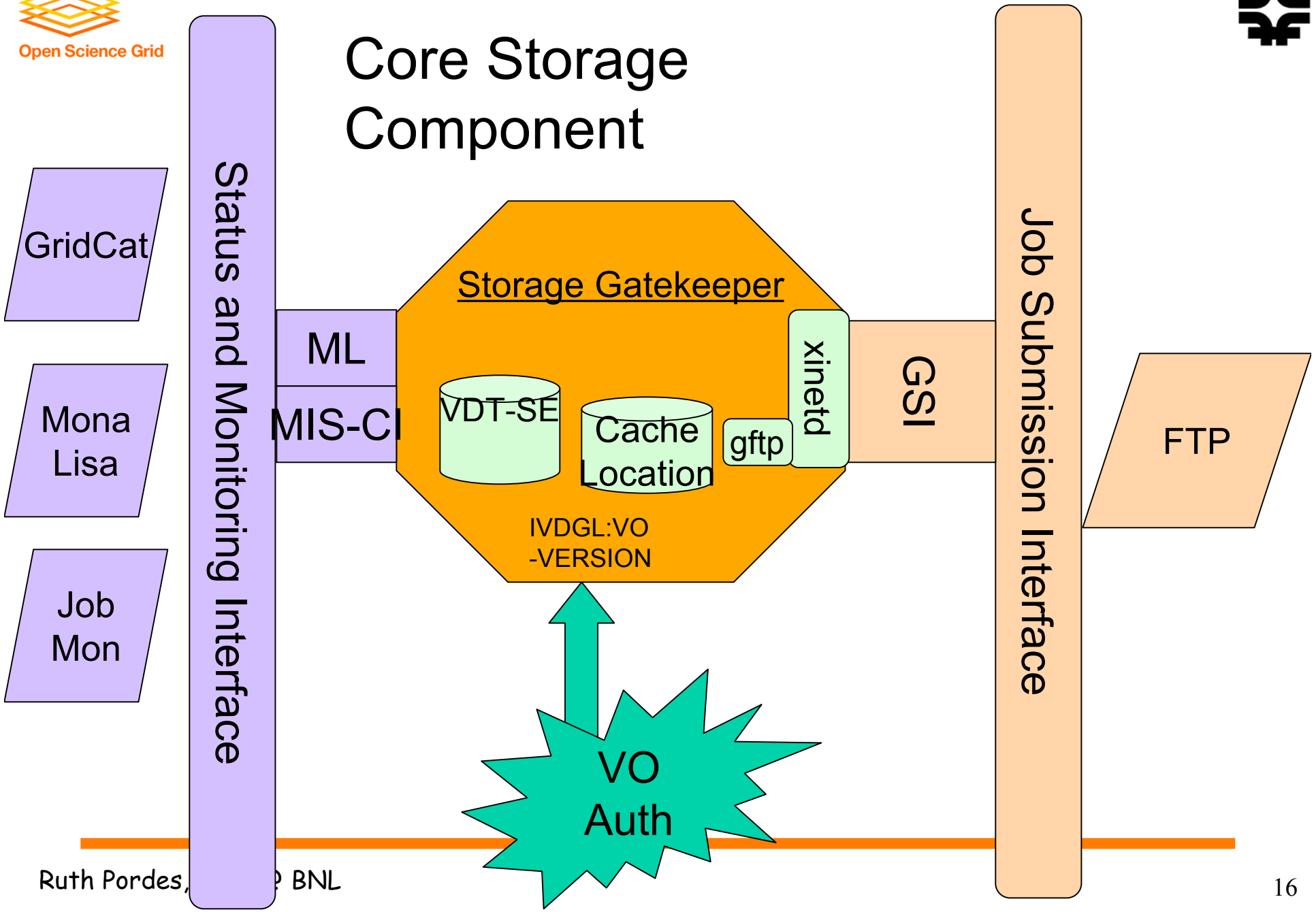
Core Storage Component



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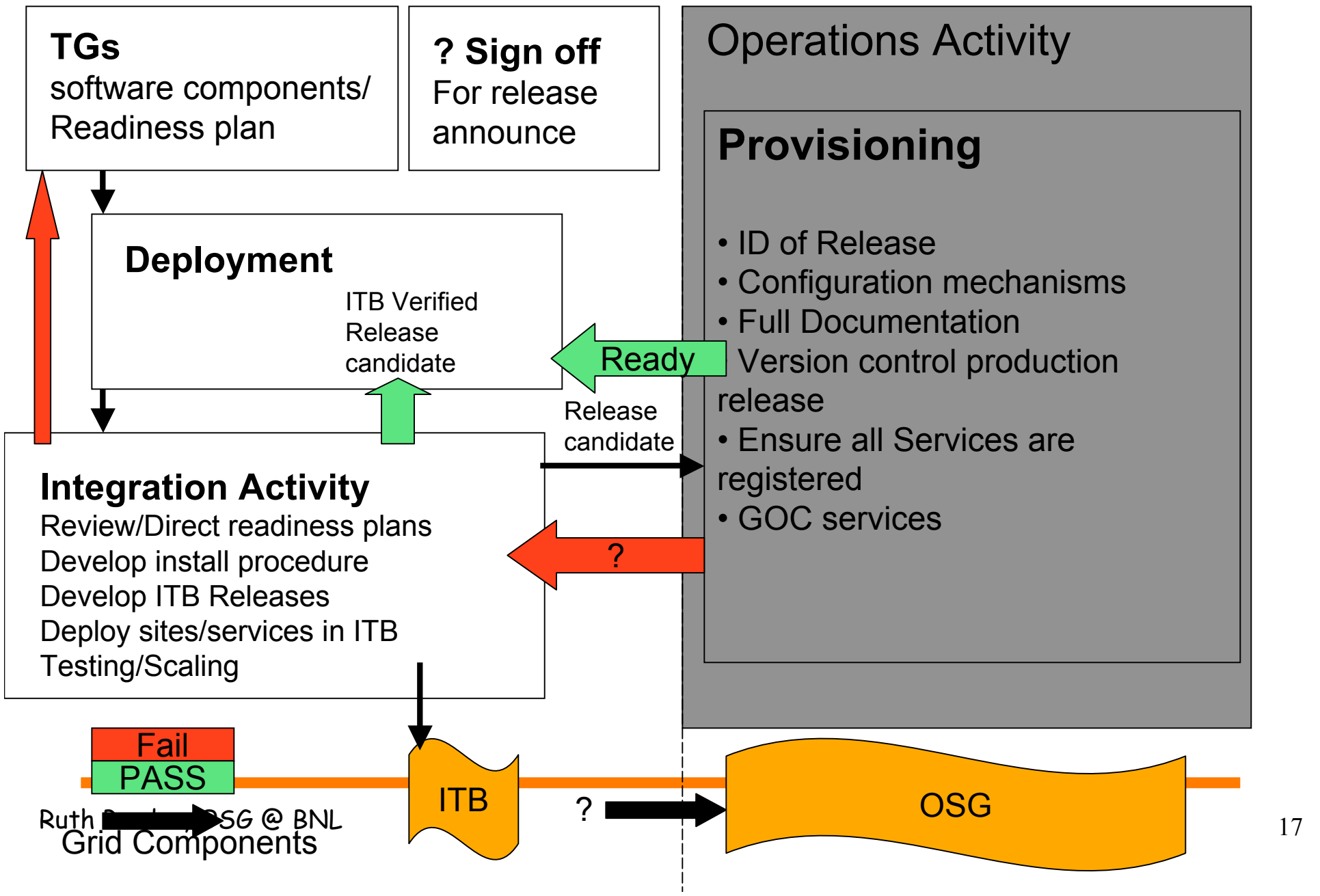
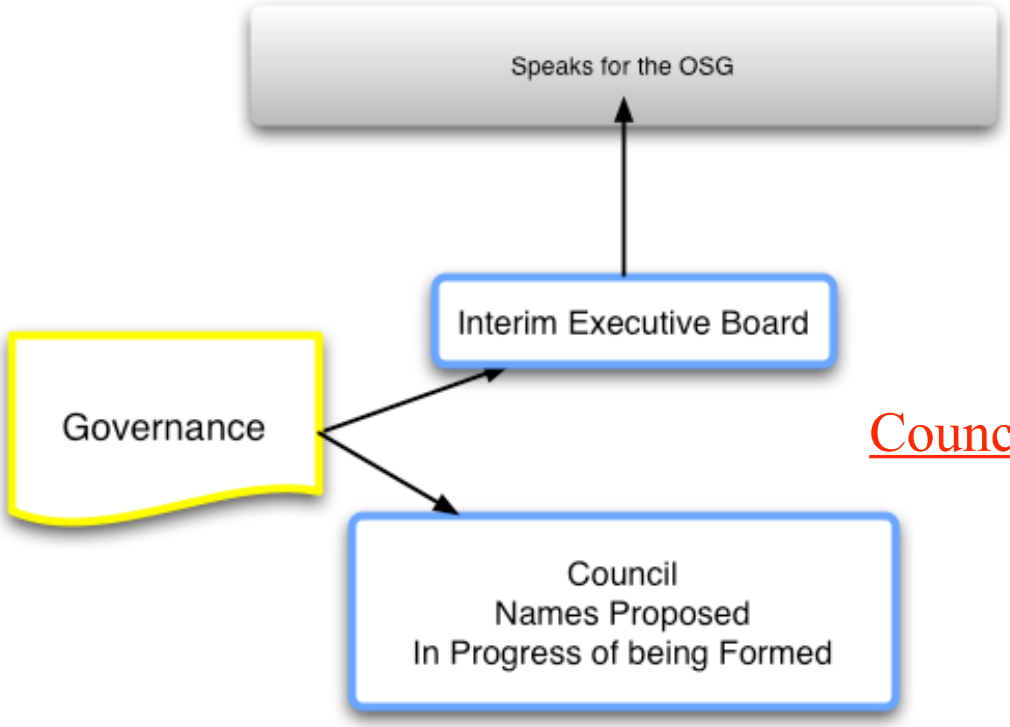

TGs
software components/
Readiness plan
? Sign off
For release
announce
Operations Activity
Provisioning
• ID of Release
• Configuration mechanisms
• Full Documentation
• Version control production release
• Ensure all Services are registered
• GOC services
Deployment
ITB Verified
Release
candidate
Ready
Release
candidate
Integration Activity
Review/Direct readiness plans
Develop install procedure
Develop ITB Releases
Deploy sites/services in ITB
Testing/Scaling
?
Fail
PASS
ITB
?
OSG
Ruth
OSG @ BNL
Grid Components

.. Preparing for Production

- User/Service/Support Agreements,
  - AUP
  - ServiceAgreement
  - Support Center Registration - in progress
- Sign off and Process for Release.
  - Security, Operations Plans.
- Consortium By-laws & Governance.
- VO administrators get more authority and responsibility.
- User documentation, Administrator documentation, Support documentation.

Governing Bodies Emerging..



Council meeting

Things we are worrying about now..

- No universal Space Management infrastructure.
- Diagnostic and fault handling tools still do not get sufficient attention and work.
- Robustness of infrastructure not good enough. No solution yet for "Head-node overload" from Grid3
- Evolution to new technologies while supporting running applications is a big challenge.
- Contributed Effort makes planning and milestones difficult to achieve.
- Heavy VO infrastructure - can we make the current design support light-weight VOS?

How do we make a loose Consortium work?

- Win-win view of contributions.
- Council in session May 3rd in Wisconsin.
- Agree on how new members and partners come on board.
- We do understand one can't really get something for nothing:
  - How will we approach funding for OSG?
- We have a long term roadmap - at least through LHC analysis.